



Original Research Article

Etiological profile of fever cases admitted to a rural hospital - A 7 year study

Kiran Shetty¹, Sarita Lobo^{2,*}¹Dept. of Medicine, Father Muller Medical College, Mangalore, Karnataka, India²Dept. of Ophthalmology, Father Muller Medical College, Mangalore, Karnataka, India

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ABSTRACT

Introduction: Acute febrile illness is region specific, has similar clinical presentations but with varied aetiologies. This study done over a period of 7 years is indented to give an insight in to the diseases endemic to this region so that the irrational use of drugs and diagnostic can be prevented.

Objective: To identify the etiology of fever cases admitted to a rural hospital in the last 7 years.

Materials and methods: Case records of 2589 cases comprising all adult patients (≥ 18 years) admitted to the hospital with temperature $\geq 38^\circ\text{C}$, less than 14 days duration with no specific foci of infection by history or physical examination were included. Diagnosed cases of fever due to other causes were excluded.

Results: Of the 2589 cases 64.73% were due to Dengue virus, 24.4% were of Plasmodium vivax etiology. 4.17% were of plasmodium falciparum etiology. In 3.01% both plasmodium falciparum and plasmodium vivax were positive. 1.54% were due to hepatitis A, 1 % were due to leptospirosis, 0.03% were due to measles and 0.07% was due to tuberculosis. The etiological profile has changed from malaria being the most common cause of fever in the year 2013, 2014 to dengue from January 2015 to December 2019.

Conclusion: In our study dengue was seen to be the most common etiology, followed by malaria, leptospirosis, hepatitis A and tuberculosis were the less common causes for acute febrile illness. Understanding the local prevalence of the disease will be helpful in diagnosis and treatment of febrile cases.

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1. Introduction

Acute febrile illness is defined as fever of duration less than 3 weeks and that which lacks an organ specific or localisable clinical feature. A number of etiological agents like virus, bacteria, rickettsia, protozoa can cause AUF. The signs and symptoms are non specific and accurate diagnosis can be a challenge. The prevalence of local etiologies helps to analyse the differential diagnosis and guide the treatment. This uncertainty can lead to irrational use of antibiotics and anti malarial drugs. Since acute febrile illness can have overlapping aetiologies diagnosis and management of these cases can be a challenge. In tropical countries and endemic areas certain febrile cases can be diagnosed by simple rapid antigen testing some may require more sophisticated tests

like polymerase chain reaction and ELISA. We study the common etiologies for acute febrile illness in the cases admitted to our rural hospital in this study, to give an insight in to the diseases endemic in this region so that the irrational use of drugs and diagnostic modalities can be prevented.

1.1. Study design

Retrospective observational study.

1.2. Sample size

2589

2. Materials and Methods

This study was undertaken in the rural hospital setting. It was a retrospective study wherein we analysed the case

* Corresponding author.

E-mail address: gonsalvessarita@gmail.com (S. Lobo).

records of 2589 patients admitted to the hospital between January 2013- to December 2019. The cases with fever of > 101 degree Fahrenheit of less than 2 weeks duration were included in the study. A detailed history was taken including history of travel, drug abuse, sexual history and contact with animals. A detailed general physical and systemic examination was performed to look for any evidence of underlying etiological cause of fever. 6 th hourly temperature charts were maintained to look for pattern of the fever.

2.1. Exclusion criteria

Those with fever due to

1. Malignancy
2. Immunocompromised states like HIV
3. Collagen vascular disease.
4. Diagnosed cases of tuberculosis
5. History of drug intake or drug allergy

The patients were subjected to baseline laboratory investigations like total count, differential count, ESR, platelet count, urine analysis. Since malaria and dengue fever are endemic to our region, tests for malarial parasite and dengue rapid antigen testing was done. Peripheral smear and chest xray were also done. Liver and renal function tests were done. The patients were also subjected to blood and urine cultures.

The software Epi-infoTM version: 3.5.1 from centre for disease control (CDC) was used for statistical analysis. Also online statistical calculators were used in some cases. A p-value < 0.05 was considered as significant.

3. Results

The results were as follows. A total of 2589 cases of classical fever of unknown origin were observed in a 7 year period. There were 1786 males (69%) and 803 females (21%), with age ranging from 20 to 76 years. (Table 1) The mean duration of fever before hospitalization was 4 days. We observed that in our set up most of the cases of FUO were due to infectious diseases. Of the 2589 cases 64.73% were due to Dengue virus, 24.4% were of Plasmodium vivax aetiology. 4.17% were of plasmodium falciparum aetiology. In 3.01% both plasmodium falciparum and plasmodium vivax were positive. 1.54% were due to hepatitis A, 1 % were due to leptospirosis, 0.03% were due to measles and 0.07% was due to tuberculosis. (Table 2) The incidence of Malaria in our study was less comparative to other studies conducted in India. The aetiological profile has changed from malaria being the most common cause of fever in the year 2013, 2014 to dengue fever from the year 2015 to 2019. Suggestive of change in the aetiology as dengue might now be endemic to this region surpassing malaria which was endemic earlier.

Table 1: Showing sex distribution of febrile cases

	Number	Percentage
Males	1786	69%
Females	803	21%

Table 2: Showing percentage distribution of febrile cases

Aetiology	Number of cases	Percentage
Plasmodium Vivax	633	24.4%
Plasmodium Falciparum	108	4.17%
Mixed Malaria	78	3.01%
Dengue fever	1676	63.73%
Leptospirosis	26	1%
Hepatitis A	40	1.54%
Measles	5	0.03%
Tuberculosis	2	0.07%

4. Discussion

Fever is one of the most important clinical signs. Fever of unknown origin (FUO) was first defined by Petersdorf and Beeson in 1961 as a temperature above 38.3⁰C (101⁰F) on several occasions over a period of more than 3 weeks, for which no diagnosis has been reached despite 1 week of inpatient investigation¹ Infection still remains the most common cause of FUO all over the world even though the demographics may vary from region to region. This was followed by connective tissue disorders (12%) and malignancies (12%).² In the developing countries acute febrile illness is mostly due to infectious aetiology, either due to dengue or malaria. Investigation and treatment is then decided accordingly.

In India, although about 100 million individuals are investigated for malaria by microscopy every year, as per the official estimates only less than 2% of them are slide positive. The annual slide positivity in malaria-endemic countries is estimated to be about 5% (6 million confirmed cases of 128 million individuals investigated in 43 countries).^{3,4} A similar study in central India on Non malarial Acute Undifferentiated (NMAUF) cases revealed that about 39.9% patients with acute febrile illness received unnecessary treatment with antimalarial drugs.⁵ However our study indicates dengue as the most common cause for fever followed by malaria, hepatitis, leptospirosis and tuberculosis. No cases of scrub typhus were reported from our region. The regional prevalence of pathogens and their chances of exposure to the local people influence the disease pattern. Hence it is important to study the diseases endemic to the region to avoid unnecessary wasting of resources and finances by subjecting the patients to unnecessary laboratory investigations.

5. Conclusion

In our study dengue was the most common cause of acute febrile illness followed by malaria and hepatitis A.

Other less common causes are leptospirosis, measles and tuberculosis.

6. Source of Funding

None.

7. Conflict of Interest

None.

References

1. Petersdorf RG, Beeson PB. Fever of unexplained origin: report on 100 cases. *Med.* 1961;40(1):1–30.
2. Kleijn EMD, Vandenbroucke JP, van der Meer JWM. Fever of Unknown Origin (FUO): I. A prospective multicenter study of 167 patients with FUO, using fixed epidemiologic entry criteria. *Me.* 1997;76(6):392–400.
3. World Health Organization, 2005. World Malaria Report . Geneva: WHO and UNICEF; 2005.
4. World Health Organization, 2007. Global RBM Online Database. Geneva: WHO; 2007. Available from: <http://www.rbm.who.int/wmr2005/htm/1-1.htm>.
5. Joshi R, Colford JM, Kalantri S, Reingold AL. Nonmalarial Acute Undifferentiated Fever in a Rural Hospital in Central India: Diagnostic Uncertainty and Overtreatment with Antimalarial Agents. *Am J Trop Med Hygiene.* 2008;78(3):393–9.

Author biography

Kiran Shetty Associate Professor

Sarita Lobo Assistant Professor

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